

工程与应用

基于Cricket传感器网络室内定位系统的设计与实现

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摘要 在高精度传感器网络室内定位系统中, 基于到达时间差的定位系统得到了越来越普遍的研究。以Cricket传感器为载体, 根据射频和超声波信号的传输特性以及信标布局的特点设计了一种改进的通信机制, 不但提高了传感器网络通信质量的而且也降低了传感器节点的能量消耗。并提出了一种与传感器工作机制相关且误差限制在1cm以内的计算距离的方法; 最后根据信标节点与接收器之间的几何关系, 实现了满足室内环境下接收器移动性需要的位置计算算法。

关键词 [到达时间差](#) [室内定位](#) [射频](#) [超声波](#)

分类号

Design and implementation of indoor location system for wireless sensor network based on Cricket

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Abstract

In high precision indoor location systems for sensor networks, the systems based on TDOA are widely being researched. In this paper, an improved communication mechanism is presented on the Cricket sensors, which can enhance the communication qualification and also reduce the energy-consumptions in sensor nodes as for the transmission characteristics of radio frequency signals, ultrasound signals and the layout of beacons. A method, computing the distance within 1 cm error and relating to the working mechanism of sensor, is also proposed. Finally, a location algorithm is implemented to fit the indoor environment and mobility of listeners on the basis of the geometric relationship between beacons and listeners.

Key words [the differential time of arrival](#) [indoor location](#) [radio frequency](#) [ultrasound](#)

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